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TO WHOM IT MAY CONCERN

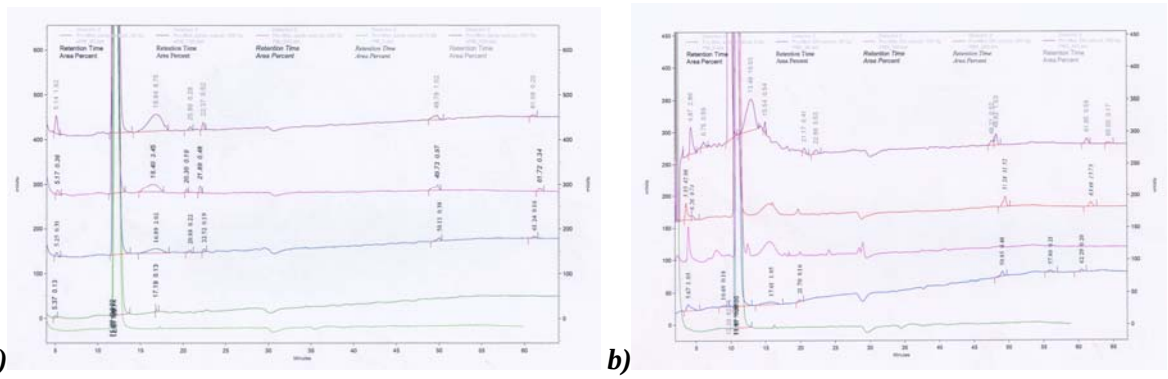
I spent one month in the Laboratory of Physics Chemistry directed by Professor Chantal Houée-Levin. The aim of my visit was the study of one-electron oxidation of compounds with thioether groups – simple models of fragments of natural peptides containing methionine residues.

I have irradiated by γ-radiolysis several samples of following compounds:

- thiodicarboxylic acid – 2,2'-thiodiethanoic acid (TDEA)
- amino acid – L-Methionine (L-Met)
- dipeptide – Prolylo-Methionine (Pro-Met)

All samples were irradiated in buffer solutions in present or absence of sodium azide in order to obtain azide or hydroxyl radical as oxidation specie, respectively. All solutions were saturated by nitrogen oxide.

After irradiation products of oxidation were separated and collected using reverse-phase HPLC techniques (Perkin Elmer Chromatograph). Three different columns C-18 type were tried and finally Beckman column (C18 ultrasphere with particle size 5μm and dimensions 4,6 x 250 mm) was chosen. It was also necessary to optimize conditions of this analysis. Optimal mobile phase elueants were water solutions: A – 0,1% TFA (trifluoroacetic acid) and B – 30% ACN (acetonitrile) and 0,1% TFA. Applied gradient elution was 0 – 100% of B in 50 minutes. The products of azide and hydroxyl radicals induced oxidation were found in almost all samples of examined compounds. For example, some chromatograms recorded during analysis of oxidation products of Pro-Met are presented on Fig.1. Samples were irradiated with different doses. The amounts of products increase with dose, but above some level secondary oxidation products are observed.



a) ***b)***

Fig. 1. Chromatograms for different doses for oxidation of Pro-Met by azide (a) and hydroxyl radical (b), respectively.

However, condition of separation of oxidation products of TDEA required further optimization.

I also collected and liophilizated main products of reaction both oxidizing species with L-Met and Pro-Met. Now I am going to characterize them applying ^{1}H-NMR and mass spectroscopy techniques available in Poland (in my parent Institute of Nuclear Chemistry and Technology in Warsaw and in laboratory at University of A. Mickiewicz in Poznań).

I would like to make use of my experience gained at University in Orsay to set a low cost HPLC setup for determination of γ-radiolysis products in my parent laboratory in Warsaw.